Application No. 09/892,161
Amendment "D" and Response dated June 19, 2006
Amendment and Response to Office Action mailed 01/17/2006

REMARKS / ARGUMENTS

A. Introduction

The present Amendment is in response to the Examiner's Office Action mailed January 17, 2006. Claims 1, 9, 16, 20, and 28 have been amended. Claims 1-7 and 9-39 remain pending in view of the above amendments.

Please note that the following remarks are not intended to be an exhaustive enumeration of the distinctions between any cited references and the claimed invention. Rather, the distinctions identified and discussed below are presented solely by way of example to illustrate some of the differences between the claimed invention and the cited references. Reconsideration of the application is respectfully requested. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

B. Objections to the Drawings

The Examiner Objected to the drawings because they are incomplete. In particular, the Examiner suggests that the following reference numerals are missing: "302" in Figure 3; user workstation "502" in Figure 5; and "302" in Figures 6 and 7.

Because the Specification has been amended as indicated above and previously amended in the response filed October 31, 2005 (hereinafter "Amendment C") to remove elements 302 and 502, this objection to the drawing is moot.

The Examiner also objected to Figure 2 because the text for the elements 21, 24, 25, 32-38, 36a, 36b, 46-48, 49a, 49b, 50b, and 51-53 are not legible and Figure 2 should be at the bottom of the drawing page.

In response, a new Figure 2 has been submitted such that text for the elements 21, 24, 25, 32-38, 36a, 36b, 46-48, 49a, 49b, 50b, and 51-53 is legible.

Applicants respectfully request that the objections to the drawings be withdrawn.

C. Objections to the Specification

The Examiner objected to the specification as follows:

1) Elements 102a, 102b, 102c, 102n, 115, 125, 135, and 142 are not described with reference to Figure 1;

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2)   Element 47 is not mentioned;

3)   Elements 302a-302n are missing with reference to Figures 3 and 4;

4)   Server A 520 is in the specification but server A 510 is missing;

5)   "315" is referenced as dedicated link but is labeled as 615 in Figures 4, 6, and 7;

6)   Policing protocol 311 is missing; and

7)   "502a-502d" are missing in the Specification.

Applicant respectfully directs the Examiner to Amendment C, which addressed some of these issues and where the Applicant has already made amendments to the specification related to the Examiner's objections. For convenience of the Examiner, the following list identifies examples of text from the specification and from the response filed on October 31, 2005 (hereinafter "Amendment C") which address the Examiner's objections.

1)   The Examiner is referred Amendment C, which amended the paragraph beginning on line 21 of Page 3. This paragraph includes the elements 102a, 102b, 102c, 102n, 115, 125, 135, and 142.

2)   The Examiner is referred to line 21 on Page 14, which references the element 47.

3)   The Examiner is referred to Amendment C, which amended the paragraph beginning on line 22 of Page 15 to include the elements 302a-302n;

4)   The Examiner is referred to Amendment C, which amended the paragraph beginning on line 1 of Page 25 to replace "520" with "510";

5)   The Examiner is referred to Amendment C, which replaced "315" with "615", for example in the paragraph beginning on line 15 of Page 19;

6)   The Examiner is referred to line 5 on Page 16, which references a policing protocol module 311;

7)   The Amendments to the Specification included in this response have amended the specification such that 502a-502d are present. No new matter is believed to have been entered.

In view of at least these examples, Applicant respectfully requests withdrawal of the Objections to the Specification.

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D.   Objections to the Claims

The Examiner feels that " . . . device; thereby enabling . . .' in claim 20 would be better recited as " . . . device; and thereby enabling . . ." Applicant has amended claim 20 accordingly and respectfully requests withdrawal of the objection to claim 20.

E.   Rejections Under 35 U.S.C. § 112

The Examiner rejected claim 10 under 35 U.S.C. § 112, second paragraph, in that the word "means" is preceded (Applicant assumes that Examiner meant followed) by the words "for mirroring data comprises a first mirror engine associated with the first server and a second mirror engine associated with the second server" in an attempt to use a means clause to recite a claim element as a means for performing a specified function. The Examiner states that because no function is specified by the words preceding (again, Applicant assumes that Examiner meant following) "means" it is impossible to determine the equivalents of the element as required by 35 U.S.C. § 112, paragraph 6. The Examiner states that claims 12 and 13 appear to have a similar problem.

Applicant respectfully disagrees. It seems clear that claims 10, 12 and 13 are not intended to invoke 35 U.S.C. § 112, ¶ 6. The list of structure provided in these claims clearly modify the "means" language. As noted in the MPEP § 2181 and further discussed below, a list of structure removes an element from the purview of 35 U.S.C. § 112, ¶ 6. Applicant is only referring to claims 10, 12 and 13 and submits that the independent claim 9 does not provide a list of structure, and therefore claim 9 presumably falls within the purview of 35 U.S.C. § 112, ¶ 6.

More particularly, as noted in MPEP § 2181, there is a three prong analysis to determine if a claim limitation is interpreted to invoke 35 U.S.C. § 112, paragraph 6.

(A)   the claim limitations must use the phrase "means for" or "step for";

(B)   the "means for" or "step for" must be modified by functional language; and

(C)   the phrase "means for" or "step for" must mot be modified by sufficient structure, material or acts for achieving the specified function.

The MPEP § 2181 further states that "Even when a claim element uses language that generally falls under the step-plus-function format, however, § 112 ¶ 6 still does not apply when the claim limitation itself recites sufficient acts for performing the specified function." *See*

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Envirco Corp. v. Clestra Cleanroom, Inc. 209 F.3d 1360, 54 USPQ2d 1449 (Fed. Cir. 2000) (holding "second baffle means" does not invoke 35 U.S.C. § 112, ¶ 6).

The Federal Circuit has also held that "positioning means for moving" does not invoke 35 U.S.C. 112, ¶ 6 because the claim further provides a list of the structure underlying the means and the detailed recitation of the structure for performing the moving function removes this element from the purview of 35 U.S.C. § 112, ¶ 6. *See Rodime PLC v. Seagate Technology, Inc.,* 174 F.3d 1294, 1303-04, 50 USPQ2d 1429, 1435-36 (Fed. Cir. 1999).

With regard to claim 10, it seems clear that the recitation of "a first mirror engine associated with the first server and a second mirror engine associated with the second server" clearly modifies the "means for mirroring" and is a list of structure. As a result, claim 10 does not invoke 35 U.S.C. § 112 ¶ 6 because of the detailed recitation of the list of the structure for performing the means for mirroring. *See Rodime PLC v. Seagate Technology, Inc.,* 174 F.3d 1294, 1303-04, 50 USPQ2d 1429, 1435-36 (Fed. Cir. 1999). Similarly, claims 12 and 13 provide a detailed recitation of a list of structure that removes them from the purview of 35 U.S.C. § 112, ¶ 6.

For at least these reasons, Applicants submit that claims 10, 12 and 13 overcome the rejection under 35 U.S.C. §, second paragraph and should enable the Examiner to examine these claims.

F.   Rejections Under 35 U.S.C. § 103

The Examiner rejected claims 1-7, 9-22, and 28-39 under 35 U.S.C. § 103(a) as being unpatentable over WO 95/00906 (*Rollins*) in view of U.S. Patent No. 5,1157,663 (*Major*) and further in view of U.S. Patent No. 6,047,356 (*Anderson*). Applicant respectfully disagrees and, for at least the following reasons, illustrates that the Examiner has failed to establish a *prima facie* case of obviousness. Further, Applicants respectfully request the withdrawal of the rejections under 35 U.S.C. § 103 in view of the following comments.

1.   No Motivation to Combine *Rollins* and *Major*

As the Examiner is aware, a *prima facie* case of obviousness requires that there must first be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine

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reference teachings. *See* MPEP § 2143. When one reference teaches away from another reference or when one reference explicitly distinguishes the failings of another reference, the motivation to combine references is absent.

Applicant reiterates arguments made in a previous response that *Rollins* and *Major* should not be combined under this test. More particularly, *Rollins* explicitly distinguishes *Major* and states that "Figure 1 illustrates the hardware configuration for a fault-tolerant computer system 100, such as described in *Major*." *See* page 3, lines 8-10. *Rollins* concludes that *Major* "is a very time consuming and resource-intensive operation." *See* page 9, lines 1-3. *Rollins* further states that "the resource intensiveness of the recovery operation can cause very substantial performance degradation." *See* page 9, lines 11-13. One of skill in the art can appreciate that it would be undesirable to modify *Rollins* in order to have "substantial performance degradation".

Because *Rollins* explicitly identifies the disadvantages and undesirability of *Major* as discussed above, one of skill in the art would not be motivated to combine these references. As a result, a *prima facie* case of obviousness is not established.

2. Examiner is using Impermissible Hindsight

In view of the fact that *Rollins* explicitly teaches away from *Major* as illustrated above, it also appears that the Examiner is using impermissible hindsight to reconstruct the claims. When applying 35 U.S.C. § 103:

(A) the claimed invention must be considered as a whole;

(B) the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;

(C) the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention.

See MPEP § 2141(II).

If the Examiner is considering the references as a whole, then the fact that *Rollins* describes the undesirability of *Major* suggests that the Examiner is not properly applying the tenets of patent law identified above. *Rollins* states that *Major:*

> is a very <u>time consuming</u> and resource-intensive operation; and that
> the resource intensiveness of the recovery operation can cause very <u>substantial performance degradation.</u>

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These assertions by *Rollins* make it clear that the combination of *Rollins* and *Major* do not suggest the desirability and thus the obviousness of making the combination.

Further, the Examiner is not permitted to cite art merely because a particular element of a claim may be found therein. Instead, the Examiner is required to consider the references as a whole and, as indicated above, the references as a whole must suggest the desirability of the combination.

In this case, it appears that the Examiner is piecing together the claimed invention using the claims as a guide. The Examiner appears to be searching the art on an element by element basis, rather than considering the claim as a whole. "One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *See In re* Fitch, 972 F.2d 1260, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992). This is particularly true in this case where *Rollins* establishes the undesireability of *Major*. Applicants respectfully request withdrawal of the rejection under 35 U.S.C. § 103.

The Examiner has failed to illustrate the motivation to combine *Rollins* and *Major* as required for § 103 rejections.

3. Elements of Claims are not Taught in *Rollins, Major,* and *Anderson*

Another requirement needed to establish a *prima facie* case of obviousness is that the prior art reference(s) must teach or suggest all the claim limitations. In the present case, all of the claim limitations are not taught or suggested by the cited art.

For example, the Examiner cites to lines 10-21 on page 7 of *Rollins* as teaching the requirement of "determining that the first server has write access to both the first mass storage device and to a second mass storage device connected to a second server. In fact, the portion of *Rollins* cited by the Examiner is describing a situation where one of the servers has previously failed and is being brought into "a state consistent with the server computer system." *See Rollins* page 7, lines 13-15. The Examiner is required to consider the reference as a whole and this portion of *Rollins* is describing a process that needs to be performed so that mirroring can occur between the two mass storage devices.

More particularly, claim 1 is directed to a method for mirroring data and the portion of *Rollins* cited by the Examiner describes conditions that must occur in order for mirroring to

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occur again. *Rollin* requires writing "all the changes made to the mass storage system of the non-failing server to the mass storage system of the previously-failed server so that the mass storage systems can again mirror each other." *See Rollins* page 7, lines 15-19. In other words, this portion of *Rollins* is not concerned with mirroring data per se, but discusses what is necessary so that, as taught by *Rollins*, the "storage systems can again mirror each other".

Further, claim 1 clearly requires a first mass storage device connected to a first server and a second mass storage device connected to a second server. In contrast *Rollins* teaches a connecting means that enables the mass storage devices to be connected to either server. In other words, the connection between the computer 111 and the storage devices 113 and 122 is achieved physically through the connection means 241. Claim 1, in contrast, no physical connection between the first server and the second mass storage device. Rather, the first server accesses the second mass storage device using a second mirror engine of the second server.

In other words, *Rollins* teaches a connecting means 241 that enables the mass storage systems 113 and 122 to each be physically connected to the computers 111 and 121. As a result, *Rollins* does not teach or suggest the requirement of claim 1 in executing the write request through the second mirror engine of the second server. The first server is not connected directly to the second mass storage device whereas the connecting means taught by *Rollins* connects each computer to the mass storage systems as illustrated in Figure 2 of *Rollins*.

The Examiner next states that *Major* remedies the failure of *Rollins* to teach "using a mirror engine of the first server, transmitting a copy of the write request to the second server". The Examiner supports this assertion by citing to col. 8, lines 56-64 of *Major*. Applicants respectfully disagree.

Col. 8, lines 56-64 is directed to communication between an OS engine and an I/O engine. As clearly illustrated in Figure 1 of *Major*, the OS engine and the I/O engine are parts of each server. Thus, communication between an OS engine and an I/O engine can only occur in a single server. More particularly, the portion of *Major* cited by the Examiner is directed to interengine communication or to communication between the I/O engine and the OS engine in a particular server, and does not teach communication between the first server and the second server. *See* col. 8, lines 20-27. As a result, the Examiner is incorrect to assert that col. 8, lines 56-64 of *Major* teaches "using a mirror engine of the first server, transmitting a copy of the write request to the second server as required by claim 1".

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The Examiner then acknowledges that both *Rollins* and *Major* fail to teach executing the copy of the write request at the second server . . . without processing the write request using an I/O driver of the second server . . ." The Examiner cites *Anderson* to remedy the deficiencies of *Rollins* and *Major.* Applicants respectfully disagree.

Anderson is directed to a distributed file system with dedicated nodes capable of being connected to workstations at their bus. The system of *Anderson* uses a complementary client-side and server-side file caching method to increase parallelism by issuing multiple server requests to keep the hardware devices busy simultaneously. *See* abstract.

The portion of *Anderson* cited by the Examiner is discussing a client handler task that maintains a "client cache" in RAM for each open file. *See* col. 7, lines 26-27. Executing the copy of the write request at the second server by the second mirror engine . . . without using an I/O driver of the second server, as required by claim 1, is not taught or suggested by a client handler task that maintains a "client cache" in RAM for each open file.

The Examiner has failed to explain how a "client cache" can teach executing a copy of a write request as the second server. No suggestion is made in *Anderson* of the ability to mirror data. Rather *Anderson* teaches access to a distributed file system using a client cache. For example, *Anderson* is directed to "a cooperative client-side and server-side file caching method that maximized the end-to-end throughput of sequential file read and write access." *See* col. 2, lines 9-12. No suggestion is made of executing the copy request at the second server. No suggestion or teaching is present in that the same data is being writing to two separate mass storage devices in a manner that permits them to be perceived as a virtual shared storage node for the standpoint of the first and second severs.

Further, the Examiner suggests that *Anderson* teaches "without processing the write request using an I/O driver of the second server'. Applicant disagrees and notes that *Anderson* suggests both "partitioning mass storage device cache and I/O buffer memory into a plurality of memory units of equal size" and that a "plurality of sets of the units are dynamically assigned to mass storage device caches and I/O device buffers". These teachings suggest, contrary to the Examiner's assertion, that *Anderson* in fact contemplates using I/O drivers if the I/O device buffers are dynamically assigned. Thus, the assertion of the Examiner that *Anderson* teaches "without processing the write request using an I/O driver of the second server" is incorrect.

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For at least these reasons, claim 1 overcomes the cited art and is in condition for allowance. The other independent claims 9, 16, 20, and 28 also overcome the cited art for at least the same reasons. The dependent claims 2-7, 10-15, 17-19, 21-22, and 29-39 also overcome the cited art for at least this reason.

Claims 22-27, which were rejected under *Rollins, Major,* and *Anderson* in view of U.S. Patent No. 5,276,867 (*Kenley*), depend from claim 20 which overcomes the art for at least the reasons indicated above. Thus, claims 22-27 also overcome the cited art and are in condition for allowance for at least the same reasons.

Conclusion

In view of the foregoing, Applicants respectfully submit that claims 1-7 and 8-39 are in condition for allowance. In the event that the Examiner finds remaining impediments to a prompt allowance of this application that may be clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney.

Dated this 19th day of June 2006.

Respectfully submitted,

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